

the acid fastness of the organism. Growth upon the non-nutrient and the "ameba media" used by Wherry in his work, considerably reduced the acid fastness but did not altogether destroy it. He also found that reactions of culture media, varying from 1.5 acidity to 2.0 per cent. alkalinity to phenolphthalein had little effect upon the acid fastness of the tubercle bacilli.

HYGIENE AND PUBLIC HEALTH

UNDER THE CHARGE OF

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The Prevention of Fatigue in Manufacturing Industries.—SPAETH (*Jour. of Industrial Hygiene*, 1920, vol. i, No. 9) states that the absence of a critical preliminary analysis has led to a confusion in the minds of certain physiologists between normal fatigue in industry ("industrial fatigue"), which is harmless, and cumulative fatigue, which is dangerous and may be associated with serious nervous disorders (industrial psychoneuroses). So far as we are aware there exists at present no valid quantitative physiological test for cumulative fatigue. Since normal fatigue may merge insensibly into cumulative fatigue, the reduction of normal fatigue to a minimum is the first logical step in a prophylactic attack. Normal fatigue may be reduced by a careful adaptation of all environmental factors such as illumination, ventilation, humidity, temperature, disposition of machinery, seating facilities, periods of rest, adequate and nutritious food, etc., to the physiological requirements of the workers. There is a great need for physical, physiological and psychological standardization of industrial workers by trades and processes. We have suggested a number of simple tests or types of tests that could be applied in a large variety of industries. Such tests are important for adolescents from fourteen to twenty years of age, as well as for men and women in industry. A number of physiological shortcomings of scientific management are discussed, especially the untrained type of time-study man and certain highly unscientific aspects of time and motion study methods.

Syphilis in Railroad Employees.—STOKES and BREHMER (*Jour. of Industrial Hygiene*, 1920, vol. i, No. 9) state that a general medical examination of 1763 patients of the Mayo Clinic showed 3.1 per cent. of them to have syphilitic infections obvious enough to be detected without the use of the routine Wassermann test. Four and two-tenths per cent. of the men and 2.6 per cent. of the women have

the disease. The lowness of these figures reflects, to some extent, the weakness of clinical judgment in the recognition of this disease as compared with current figures based on the routine Wassermann test. Part of the lowness of these figures is attributable to the large farming element in the clientele of the clinic and to the low incidence of venereal diseases in the States from which most of the patients are drawn. Of the railroad employees examined, 11.7 per cent. had syphilis. The disease was eight times as frequent in them as in farmers (1.5 per cent.), three times as frequent in them as in business men (3.8 per cent.), and twice as frequent as in laborers (6.1 per cent.). The doubtful value of the history of infection and the blood Wassermann test in the recognition of these cases is shown by the fact that 24 per cent. of the patients gave no history of infection other than gonorrhea; 62.5 per cent. had observed no secondary manifestations and 53 per cent. were completely Wassermann-negative on the blood. On the other hand, 64 per cent. of those whose spinal fluids were examined showed positive findings. Of the diagnoses, 58.7 per cent. were contributed by laboratory procedures; 41.3 per cent. were identified by routine physical examination. Of the men examined, 79.5 per cent. had syphilis of the nervous system; 18.7 per cent. had cardiovascular syphilis. Pupillary abnormalities, muscular paralyses and fundus changes were present in 62.5 per cent. of the cases. Of the cases examined, 65.1 per cent. showed abnormal knee reflexes, and similarly high percentages prevailed for the other simpler details of the neurologic examination. Definite mental symptoms were present in 38.4 per cent. The above findings suggest that the routine railroad medical examination is insufficient to protect the public from the dangers of syphilis in men concerned in the operation of trains. Three suggestions are made with a view to increasing the efficiency of the railroad medical examination with respect to the recognition of syphilis: (1) Routine Wassermann tests should be performed on all employees between the ages of seventeen and twenty-five years, by a competent State board of health laboratory, and repeated on all employees reaching thirty-two years of age. (2) There should be annual effective examination of men between the ages of twenty-five and forty rather than of men over fifty years. Such examinations should include more attention to pupillary reactions than is at present given, and should employ those fundamentals of the neurologic examinations, such as tests of the deep reflexes, Romberg, etc. These can readily be performed by competent general examiners. (3) Formal educational propaganda should be undertaken by railroad medical departments for the education of medical examiners and employees alike to the great significance of syphilis in industrial insufficiency and personal ill-health.

The Prevention of Simple Goitre in Man.—KIMBALL, ROGOFF and MARINE (*Jour. Am. Med. Assn.*, 1919, lxxiii, 1873) report results on the prevention of goitre based on the examination of girls in the public schools of Akron, Ohio, in grades from the fifth to the twelfth, inclusive, made from November 26 to December 3, 1918—nineteen months after beginning the prophylactic use of iodine. The method used was to administer 2 grams sodium iodide in 0.2-gram doses for ten consecutive school days, repeated each autumn and

spring. The results showed that simple goitre may be prevented on a large scale and that the method is practical and economical and can be recommended as a public health measure in goitre districts. The danger of iodism or of exophthalmic goitre from such amounts of iodine as were given is shown to be negligible.

Complement Fixation in Diagnosis of Tuberculosis.—MOORSUND (*Jour. Infect. Dis.*, 1920, xxvi, 85) states that the complement-fixation test for tuberculosis as described in his article is of no value as a diagnostic or prognostic aid. The complement-fixation test for tuberculosis with alcoholic extract of tubercle bacilli as antigen, is not specific. Not all complement-fixation tests with bacterial antigens are specific. A large percentage of serums giving a positive Wassermann give fixation with tubercle and gonococcus antigens. A certain number of individuals not infected with tuberculosis or gonorrhea will give positive fixation tests with one or both of the corresponding antigens.

The Fate of Bacteria Introduced into the Upper Air Passages.—BLOOMFIELD (*Am. Rev. Tuberculosis*, 1919, iii, 553) states that the general result of his experiments indicates that even after a short period of time it is usually impossible to recover *Sarcina lutea* swabbed in large amounts on the tongue, nasal mucosa, or into the crypts of the tonsils. Whereas, disappearance from the nose was somewhat slower than from the other sites, in only one case could any organisms be recovered after twenty-four hours, and in none after two days. Cultures made in this way do not, of course, prove the complete absence of the microorganism in the mouth and nose, but the general trend of the quantitative relations indicates a rapid disappearance. The fact that the estimated dose of 50 to 100 billion organisms was vastly greater than that in any natural infection, indicates the remarkable efficiency of the mechanism present in the upper air passages for disposing of this organism. An analysis of the possible factors active in effecting this disposal indicated that retraction of mouth secretions, mechanical action and other mouth bacteria play little, if any part, but the saliva and mouth secretions exert a prompt and marked bactericidal effect. Similar methods are being used in studying the fate of other microorganisms introduced into the upper air passages.

Potency of Antimeningococcal and Antipneumococcal Serums.—The measure of control enforced at the Hygienic Laboratory of the U. S. Public Health Service (*Public Health Reports*, 1919, xxxiv, 2657) with respect to the serums used in the treatment of pneumonia and meningitis are described in great detail. In each case it is required that the serum under test shall compare favorably with the standard. In the case of the antipneumococcus serum a mouse-protection test is employed, while serological methods are depended on for evaluating the antimeningococcus serum.

Closing Schools as a Means of Controlling Epidemics.—Committees of the United States Bureau of Education and of the American Public Health Association (*Public Health Reports*, 1919, xxxiv, 2668)

as the result of an investigation report that the successful control of epidemic disease among school children requires: (1) Keeping the schools open, with the possible exception of sparsely-settled rural districts when medical inspection cannot be obtained and where aggregation takes place only in the schools. (2) Careful daily or frequent periodical inspection of schools. (3) Careful provision for exclusion of cases and contacts, emphasis being placed on clinical data rather than upon fixed periods of exclusion. (4) Systematic home visitation. (5) Reliance upon natural and physical cleansing rather than upon chemical disinfectants.

Steam as a Bedbug Eradicator.—The Public Health Service (*Public Health Reports*, 1919, xxxiv, 2713) describes the destruction of bedbugs in a large bunk-house in which it was possible to subject the whole interior of the building to steam. A temperature of 160° F. maintained for three hours was found to be effective. The building was still free from bugs two months after the steaming.

Botulism from Eating Canned Ripe Olives.—ARMSTRONG and STORY (*Public Health Reports*, 1919, xxxiv, 2877) report an outbreak of 14 cases of botulism from the eating of ripe olives. Seven of the cases proved fatal. The circumstances of the outbreak were such as to render study by epidemiological methods very easy. Such methods point directly to the olives as the source of the poisoning, and an examination of some of the suspected material showed it to contain the toxin of the *Bacillus botulinus*. The olives in question were remarked to be of abnormal taste, and closer examination showed that they were certainly spoiled. Only three persons among the seventeen who ate of the spoiled olives failed to develop clear indications of botulism. Under the section on prevention the author states that: (1) The epidemiological investigation points to the ripe olives as the vehicle of the poison. (2) The olives and brine were found to be highly toxic for animals, both when fed and when injected. (3) The organism isolated from the olives and brine seems, from its morphology, cultural characteristics, toxin formation, and from the symptoms and pathological lesions produced, to be a strain of *Bacillus botulinus*. (4) Antitoxin and agglutinins could not be demonstrated in the blood of recovering patients forty-five days after the dinner. (5) Alcohol has the property of neutralizing the toxin when mixed *in vitro*. (6) It would seem that *Bacillus botulinus* does not produce its toxin under usual conditions in a warm-blooded animal.

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